WHAT IS CLAIMED IS:

1. A super-lightweight ceramic foam having a cellular structure formed by foaming one of an aqueous slurry containing ceramic powder and ceramic short fibers dispersed throughout said slurry, and an aqueous slurry containing ceramic short fibers dispersed in an aqueous solution having a component serving as a raw material of ceramic powder dissolved therein, and firing said foamed slurry, wherein said ceramic short fibers are evenly dispersed throughout said cellular structure to effectively reinforce said cellular structure, and said ceramic foam has a density of 0.2 g/cm^3 or less.

2. The super-lightweight ceramic foam as claimed in claim 1, wherein each of said ceramic short fibers has a length 1.5 or more times greater than the diameter of each cell in said cellular structure, and wherein said length allows said ceramic short fibers to be evenly dispersed in said cellular structure.

3. The super-lightweight foam as claimed in claim 2, wherein said cells in said cellular structure have a diameter of 200 to 500 μm.

4. The super-lightweight foam as claimed in claim 2, wherein said ceramic short fibers have a length of 0.5 to 5 mm.

5. A method of producing a super-lightweight ceramic foam, comprising the steps of:

adding ceramic short fibers into a nonaqueous solvent containing a metal alkoxide dissolved therein;

dispersing said ceramic short fibers in said nonaqueous solvent;

adding one of an aqueous slurry containing ceramic powder, and an aqueous solution containing a component serving as a raw material of ceramic powder dissolved therein, into said nonaqueous solvent;

stirring said obtained mixture;

allowing said mixture to separate into an aqueous phase and an nonaqueous phase;

removing said supernatant nonaqueous phase to obtain an aqueous slurry containing said ceramic short fibers dispersed therein;

adding a foaming agent into said slurry;

foaming said slurry under mechanical stirring;

filling and drying said foamed slurry in a mold to form a molded body; and

firing said molded body.

6. The method as claimed in claim 5, wherein said ceramic short fibers are added into said nonaqueous solvent in the range of 5 to 95 weight % relative to said ceramic material contained in said aqueous slurry or said aqueous solution.

7. The method as claimed in claim 5 or 6, wherein said aqueous slurry or said aqueous solution includes mixed therewith or dissolved therein a substance serving as a sintering aid and/or a particle growth inhibitor.

8. The method as claimed in claim 5, wherein said metal alkoxide is dissolved in said nonaqueous solvent in a range of 0.1 to 20 weight parts per 100 weight parts of said ceramic short fibers dispersed in said nonaqueous solvent.

9. The method as claimed in claim 8, wherein said metal alkoxide is dissolved in said nonaqueous solvent in a range of 0.5 to 10 weight parts per 100 weight parts of said ceramic short fibers dispersed in said nonaqueous solvent.

10. The method as claimed in claim 5, wherein said ceramic short fibers are dispersed in said nonaqueous solvent in a range of 10 weights parts or more per 100 weight parts of said nonaqueous solvent, and the volume of said aqueous slurry or aqueous solution added to said nonaqueous solvent is at least 25% of the volume of said nonaqueous solvent.

11. The method as claimed in claim 5, wherein said aqueous slurry or aqueous solution further contains a peptizer.

12. The method as claimed in claim 11, wherein said peptizer is selected from the group consisting of an acid, a base, and a polyacrylic ammonium.